City of NORFOLK

December 10, 2015

TO: ALL POTENTIAL OFFERORS

RE: RFP 4848-0-2016/DH, Public Safety Recruitment and Promotional Exams, Addendum 2

Due: December 15, 2015 at 2:00 p.m. Eastern Daylight Time

The above referenced RFP is hereby amended and clarified to include the following revisions to the solicitation documents:

The due date has been changed to **December 21, 2015 at 2:00 p.m.**

This schedule of events supersedes the schedule of events published in addendum 1

Event	Date
IFB Issued	November 17, 2015
Pre-Bid and Site Visit	November 23, 2015 at 3:00 p.m.
Question 1 Deadline	November 30, 2015
Amendment 2 Issued	December 10, 2015
Question 2 Deadline	December 14, 2015 (Questions pertaining to Addendum 2)
Amendment 3 Issued	December 16, 2015
Proposals Due	December 21, 2015 @ 2:00 PM EST
Intent to Award posted	January 2016
Contract begins	February 2016

Question:

1. In Section I – Background, Purpose and Scope of Services, Paragraph B. Purpose / Agreement for Services. It states "These examinations shall include written and behavioral assessments and may consider physical agility testing or other validated examinations." Can an offeror just submit a proposal to the physical agility testing portion of the RFP?

   R: Yes.

2. What are the physical requirements for the Police and Fire Departments?

   R: Attached is the physical requirements for the Fire Department, the Police Departments physical requirements are similar.

All other provisions of the RFP shall remain unchanged. The provisions, herein, shall become part of the RFP package, and offeror shall acknowledge receipt of the addendum by signing in the space provided below and returning it with your proposal.

Signature: _____
(Offeror)

Office of the Purchasing Agent
232 East Main Street, Suite 250 ▪ Norfolk, Virginia 23510
Phone: 757-664-4787 ▪ Fax: 757-664-4018

Sincerely,

Danny Hawk
Procurement Specialist

Attached: Physical Performance Tests
For Firefighters

HUMAN PERFORMANCE SYSTEMS, INC.

PHYSICAL PERFORMANCE TESTS

FOR CITY OF NORFOLK FIREFIGHTERS

TEST MANUAL

Deborah L. Gebhardt, Ph.D.
Valarie A. Sheppard, M.A.

Submitted to:

The City of Norfolk, Virginia

Human Performance Systems, Inc.
4307 Jefferson Street
Hyattsville, Maryland 20781

SEPTEMBER 1999

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INTRODUCTION

In the past several years, an increasing number of public and private sector organizations have developed and validated physical performance tests for a variety of physically demanding jobs, including those in public safety, transportation, electric power, oil, gas, and communications industries. Like these organizations, the City of Norfolk is concerned that the individuals who work as Firefighters are capable of performing the job tasks safely and effectively. By ensuring that the capabilities of the employees are matched to the demands of the job, productivity can be maintained and injuries can be reduced. To meet these goals a battery of physical performance tests was designed and validated to evaluate the physical capabilities of job examinees for the Firefighter position.

Human Performance Systems, Inc. (HPS) conducted interviews and observations to identify the job tasks performed in this position and determined the physical requirements of the job tasks. Based on this information, a battery of tests was developed to determine the tests that are most predictive of job performance. The physical test battery is composed of tests that evaluate an individual's capabilities in relation to the physical demands of the job. The test battery is designed to provide for safe and efficient evaluation of candidates and incumbents. To achieve fair and safe personnel evaluation, the instructions and testing procedures outlined in this manual must be followed.

MANUAL ORGANIZATION

The test manual provides a description of the job simulations that are used to evaluate both the candidates and incumbent personnel. The test manual provides information about test set–up, scoring, and administration procedures.

TEST ADMINISTRATION

Administrator Qualifications

The tests in this manual are intended to be administered only by personnel who have been trained in the proper testing procedures. This safeguard will ensure safety and fairness for all examinees. Test administrators need to be trained in the use and scoring of the tests. This training should include (1) observation of the tests being administered; (2) instruction on how to administer the tests; (3) administration of tests by the person being trained; and (4) practice in test administration. Reading this manual or observing test performance alone is not adequate preparation for administering the tests. Inadequate administrator preparation could lead to invalid test results.

Candidate Information

Individuals taking the test battery should be instructed to wear or bring shorts and sneakers or other clothing appropriate for physical performance testing. Testing should be postponed if an individual has had a recent illness or injury and rescheduled for a future test date that is commensurate with recovery from the injury or illness. All ADA guidelines related to pre-employment procedures, should be followed.

Incumbent Information

Ensure that all incumbents have been medically cleared to participate in the test battery. Testing should be postponed if an incumbent has not been medically cleared.

Test Site Set-up and Guidelines

The test site must be organized to facilitate the safety and the processing of examinees from one test to another. The test space should be set up with adequate room between test stations to eliminate interference with testing procedures. Although the physical set-up of the test site may vary due to changes in the location of the test site, the following items should be observed at all times.

1. NO smoking or chewing of tobacco should be allowed in any test area or scoring area. This applies to administrators, examinees, and other personnel whether assisting in the testing process or observing. This policy must be enforced by all test supervisors and administrators. Smoke in a confined area interferes with the examinees' performance.
2. Emergency procedures must be established at each testing site so that the test administrator knows what to do in case of an emergency (e.g., who to contact, what phone number to call). Additionally, water should be available at all test sites.
3. Chairs should be provided at each test station for the examinees. Before going over the test instructions, the administrator should instruct the examinees to be seated. This helps ensure that everyone is ready to begin. Further, this procedure will assist the administrator in maintaining an orderly test setting.

4. The test administrator should be pleasant and treat everyone in the same manner. Administrators should not provide encouragement during testing. The examinees should be self–motivated.

   The administrator should not indicate whether the an individual has scored well or poorly. Reduction of the individual's anxiety is important in achieving a test performance that is representative of the person's ability. If the individual realizes that his/her performance is poor on one test, it may adversely affect performance on other tests.

   Test administrators must discourage extrinsic motivation being provided by other applicants. This will be facilitated by not providing test scores until the testing is completed. Additionally, administrators are responsible for stopping any outside encouragement, whether it be from applicants or any other individuals. There should be no yelling or cheering during the test sessions.

5. Test administrators should monitor examinees for excessive fatigue, nausea, or dizziness. If any symptoms are observed, stop the test and ask the individual to sit down. If the individual continues to feel nausea or dizziness get further medical assistance.

6. Handle all equipment carefully. Dropping the equipment will potentially cause damage requiring costly repairs.

Equipment Check–Out

The equipment used for testing should be inspected before each testing session. The following section lists the items that should be inspected for each piece of equipment.

Firefighter Evolution

1. Ensure the course is set up as shown in Evolution diagram (Figure 8, page 15).
2. Ensure that all runways are properly marked and the cones are in the proper positions.
3. Ensure mannequin, hose rolls, highrise bag, sledgehammer and flaked hose are in the proper locations.

Maze Crawl

1. Ensure that the maze is set up properly and that there are no unintended obstacles in the maze.

Aerial Ladder Climb

1. Ensure that the ladder is raised at a 70 degree angle.
2. Ensure that the safety belt and pulley is secure and the rope is securely attached to the pulley.
3. Ensure that the rung to climb to is clearly marked.
4. Ensure that several harness sizes are available.

The Test Instruction section describes each of the tests. Included in these test descriptions are the procedures for administration and the equipment to be used.

Warm–Ups

To ensure the safety of the candidate, begin the testing session with the following exercises: Hamstring Stretch, Body Twister, Heel Cord Stretch, and Quadriceps Stretch. (Figures 1, 2, 3, and 4).

HAMSTRING STRETCH

Starting Position

Sit on the floor with your legs straight and spread apart as far as possible.

Your feet should be perpendicular to the floor, such that the toes of the feet are pointed upward.

Movement

Slowly reach forward toward the left foot with both arms, while keeping the back flat and moving the chest toward the left knee.

Keep the head up, the back flat and the toes pointed upward as you bend at the hips to move the chest towards the left knee.

Attempt to reach down the left leg as far as possible until you feel a stretch in the back of the thigh.

Keep both sides of your buttocks on the floor.

Hold

Hold the stretched position for 10–20 seconds. ***You should feel the stretch in the hamstrings.*** If not, check to see that you are bending at the hips and not rounding the back. You may also attempt to reach further down the leg to feel the stretch.

Repetitions

Repeat the exercise 3 times for each leg.

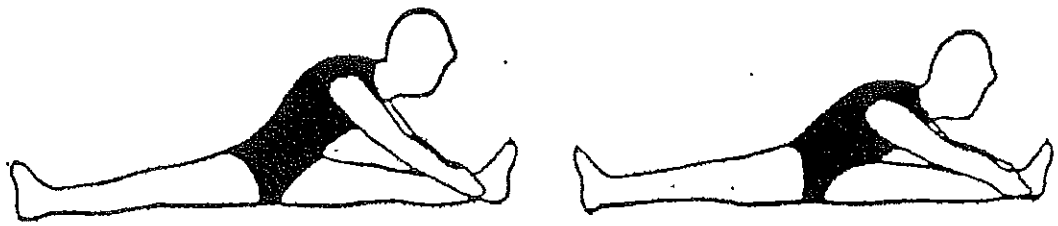

Figure 1. Hamstring Stretch.

BODY TWISTER

Starting Position

Place the right side of the body an arms length away from a wall.

Stand erect with the feet shoulder width apart.

Keep your arms straight and place them at your sides at shoulder height.

Movement

Slowly twist the upper body to the left (counterclockwise) keeping the arms extended at shoulder height.

As you twist to the left, allow ***only the right heel*** to come off the floor.

Twist as far as possible, attempting to touch the wall with the left hand. If you can not reach the wall simply hold the stretch in a comfortable position.

Hold

Hold the position for 10–20 seconds. ***You should feel the stretch in your trunk and shoulders***. If not, slowly attempt to twist just a bit further.

You should not feel any strain in your back or knees.

Repetitions

With the right side towards the wall perform the exercise 3 times

Repeat the exercise with the ***left side*** toward the wall, allowing only the ***left heel*** to come off the floor.

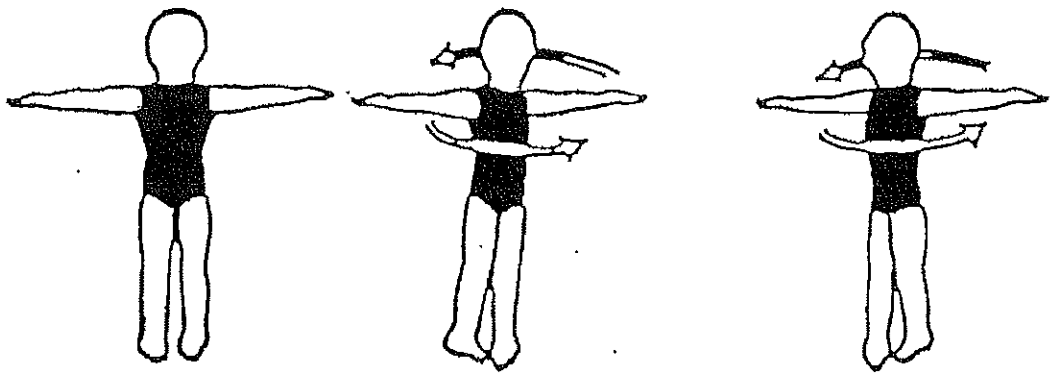

Figure 2. Body Twister.

HEEL CORD STRETCH

Starting Position

Stand facing the wall at approximately arms length away.

Place your hands on the wall at shoulder height.

Step back with the one leg, keeping it straight but allowing the knee of the other leg to bend.

Keep both heels on the floor and both feet pointed directly towards the wall.

Movement

Bend the knee of the forward leg as you slowly lean to the wall.

Continue to lean forward until you feel a stretch in the calf.

Hold

Hold this position for 10–20 seconds. ***You should feel the stretch in the Achilles tendon and calf.*** If not, be sure that your toes are pointing directly towards the wall. You may also lean further into the wall to obtain a stretch.

Repetitions

Repeat the exercise 3 times for each leg.

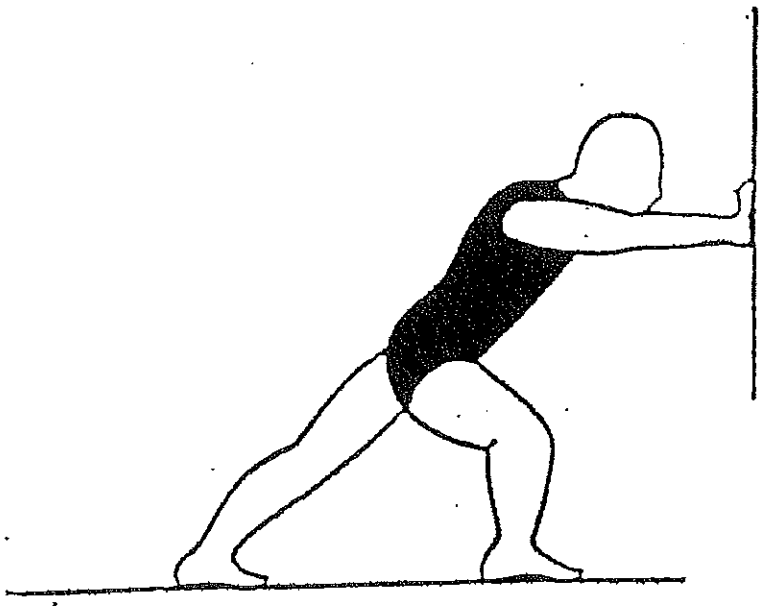

Figure 3. Heel Cord Stretch.

QUADRICEPS STRETCH

Starting Position

Stand erect with the feet shoulder width apart.

Grasp a stable surface with the right hand (e.g., chair, table).

Action

Bend the knee of the right leg so you can grasp the right foot behind you with the left hand.

Slowly and gently pull the right heel upward towards the buttocks as you move the bent leg back.

Hold

Hold the stretched position for 10–20 seconds. ***You should feel the stretch in the front of the thigh and across the hip joint.*** If not, continue to gently pull the bent leg back and upwards as you push forward with the right hip.

Repetitions

Repeat the exercise 3 times for each leg.

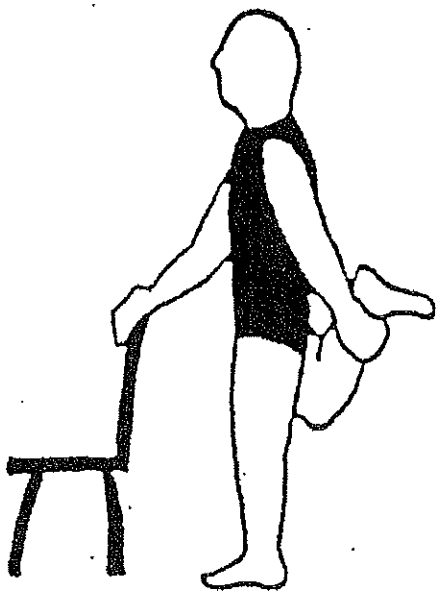

Figure 4. Quadriceps Stretch.

Test Protocol

The instructions for test administration are contained in the Test Instruction section of the manual. The tests must be given to all examinees in the order listed below to minimize the effects of fatigue.

1. Firefighter Evolution
2. Maze Crawl
3. Aerial Ladder Climb

Preliminary Questionnaire for Candidates

The first step in this screening process is to administer a questionnaire that addresses the individual's ability to complete assessments in the test battery. The questionnaire should ascertain whether there is any reason that the individual cannot participate in strenuous exercise. This questionnaire must be reviewed prior to administering the test battery. Examples of questions are listed below. If the answer to any of the questions is "yes", the individual should be referred to a City representative who is in charge of the administration.

Examples of Preliminary Questions

1. Is there any reason that would prohibit you from safely participating in the tests?
2. Is there any reason that you are not able to complete the physical performance tests described to you?

Scoring the Tests

At the beginning of the test session enter the candidate's background information on the score sheet. Record the scores for the tests in the spaces provided on the score sheet (Figure 5).

Listed below are general instructions for scoring each test. More detailed instructions for scoring each test are provided in the Test Instructions section of the manual.

1. *Firefighter Evolution:* Record the scores from two stopwatches for the evolution in the spaces labeled Timer 1 and Timer 2. Record the scores to the one-hundredth of a second. Then record the faster score in the space beneath the "Final Score" heading, ***as long as the difference between the two scores is two seconds or less.***

   Figure 6, shows two examples for times obtained in the Firefighter Evolution. These examples are shown in the same score sheet for convenience only.

   For example, Firefighter Evolution *Example 1* in Figure 6 shows the scores from the two watches were 4:14.68 and 4:14.84. There are less than two seconds difference between the two scores. Therefore, 4:14.68, the faster score is entered in the space under the Final Score heading.

   If however, the difference between the scores is greater than 2 seconds, the average of the scores must be taken.

CITY OF NORFOLK FIREFIGHTERS
PHYSICAL PERFORMANCE TEST SCORE SHEET

Name _____ Test Site _____

Date _____

TESTS	Timer 1	Timer 2			Final Score
Firefighter Evolution	_:__.__	_:__.__			_:__.__
	If the difference between Timer 1 and Timer 2 is greater than 2 seconds complete the calculation below.				
			Total Evolution Sumscore (Timer 1 + Timer 2)	Average Score [(Timer 1 + Timer 2) ÷ 2]	
	Minutes x 60	Minutes x 60	___.__	___.__	
Mask Maze Crawl	_:__.__				_:__.__
Aerial Ladder Climb	_:__.__				_:__.__

Convert seconds back to minutes for Final Firefighter Evolution Score

1. Average divided by 60: ___.__ ÷ 60 = __ . _____
2. Fraction multiplied by 60: . _____ x 60 = __ . __
3. Add the minutes from step 1 to step 2: __ + __ . __ = _ : __ . __
4. Enter this value under the Final Score heading.

Figure 5. Score Sheet

Firefighter Evolution *Example 2* in Figure 6 shows the scores from the two watches were 4:13.21 and 4:15.25. These scores had a difference greater than 2 seconds, so the average of the scores was calculated. First the scores were converted to seconds, by multiplying the minutes by 60 *(4 x 60 = 240)*. Then this amount was added to the seconds and 100ths *(4:13.21: 240 + 13.21 = 253.21; 4:15.25: 240 + 15.25 = 255.25)*. The recalculated values were summed *(253.21 + 255.25 = 508.46)* and then the averaged *(508.46 ÷ 2 = 254.23)*.

The score must then be re-converted to be entered on the score sheet. In order to convert the average (254.23) into minutes and seconds, divide the number by 60 *(254.23 ÷ 60 = 4.2372)* this will give you the whole minutes. Then multiply the amount after the decimal (.2372) by 60 *(.2372 x 60 = 14.23)*. Add this amount to the minutes *(14.23 secs + 4 mins)* for the converted total time *(4:14.23)*. The score of 4:14.23 would be entered under the Final Score heading.

If the individual's mean score (e.g., 4:19) exceeds the passing score of 4:14.77 and results in the individual failing the evolution, the individual should be offered a second trial. The second trial should be given at a minimum of 15 minutes after completion of the first trial.

2. *Maze Crawl*: Record the time to complete the maze crawl in the space on the score sheet labeled Timer 1 and Final Score on the score sheet. See Figure 6 where the maze crawl score of 0:29.76 is recorded under Timer 1 and Final Score on the score sheet.

3. *Aerial Ladder Climb*: Record the time to ascend and descend the aerial ladder in the space on the score sheet labeled Timer 1 and Final Score on the score sheet. See Figure 6 where then aerial ladder climb score of 1:18.51 is recorded under Timer 1 and Final Score on the score sheet.

Test Passing Scores

The candidate's score for each test is the value recorded under Final Score on the Score Sheet. To pass the test battery the candidate must achieve a final score on <u>each</u> test that is equal to or greater than the passing score.

The passing score for these three tests are:

1. Firefighter Evolution: **4:14.77**
2. Maze Climb: **32.0 seconds**
3. Aerial Ladder Climb: **1:59.00**

Using the example from Figure 6, passing scores are compared to the individual's Final Scores on each test. Comparison of these values to the passing scores shows that the individuals passed each of the tests.

CITY OF NORFOLK FIREFIGHTERS
PHYSICAL PERFORMANCE TEST SCORE SHEET
EXAMPLE

Name Kimberly Smithe Test Site Training Academy

Date 8/22/1999

TESTS	Timer 1	Timer 2			Final Score
Firefighter Evolution *Example 1*	4:14.68	4:14.84			Example 1 Final Score 4:14.68
	If the difference between Timer 1 and Timer 2 is greater than 2 seconds complete the calculation below.				
			Total Evolution Sumscore (Timer 1 + Timer 2)	Average Score [(Timer 1 + Timer 2) ÷ 2]	
	Minutes x 60	Minutes x 60			
Firefighter Evolution *Example 2*	4:13.21	4:15.25			Example 2 Final Score 4:14.23
	If the difference between Timer 1 and Timer 2 is greater than 2 seconds complete the calculation below.				
			Total Evolution Sumscore (Timer 1 + Timer 2)	Average Score [(Timer 1 + Timer 2) ÷ 2]	
	Minutes x 60 4 x 60 = 240 + 13.21 = **253.21**	Minutes x 60 4 x 60 = 240 + 15.25 = **255.25**	508.46	254.23	
Mask Maze Crawl	29.76				29.76
Aerial Ladder Climb	1:18.51				1:18.51

Convert seconds to minutes

1. Average divided by 60: 254.23 ÷ 60 = 4.2372
2. Fraction multiplied by 60: .2372 x 60 = 14.23
3. Add the minutes from step 1 to step 2: = 4:14.23
4. Enter this value under the Final Score heading.

Figure 6. Example of Completed Score Sheet

TEST INSTRUCTIONS

The instructions for the Evolution, Maze Crawl, and Aerial Ladder Climb are contained on the following pages. The purpose of each test, equipment and materials required for test administration, and instructions to the administrator and examinee are included in each test description. These instructions must be followed very carefully to ensure that each candidate is provided with the same test setting and instructions. **The instructions in the "Instructions to Examinee" section must be read out loud.** After reading the instructions and demonstrating the test, make sure that the individual understands the testing procedures before beginning the test.

During the testing the administrator must remain as objective as possible and not provide encouragement. Providing encouragement may result in an unfair testing situation if equal motivation is not given to all examinees. An objective manner should be maintain throughout the test administration.

The aerobic capacity test (VO_2 Test) is included in the test instruction section for research purposes. This test should be given after the completion of all other physical tests.

FIREFIGHTER EVOLUTION

PURPOSE

This evolution simulates essential physical tasks performed by firefighters on the job. These tasks include carrying and raising a ladder, dragging a victim and dragging charged hose.

EQUIPMENT AND PERSONNEL REQUIREMENTS

1. Weighted vest (40 lbs). Several vests should be purchased in a variety of sizes.
2. 16–foot roof ladder.
3. Stand to place roof ladder on with adjustable heights.
4. 24–foot ladder and apparatus to hold the ladder in an upright position.
5. Highrise Bag weighing 41 lbs.
6. Set of 6–step stairs.
7. One (1) 1–3/4" (24 lbs.) and one (1) 2–½" (44 lbs.) hose rolls.
8. 20 feet of rope
9. 2 carabiners
10. 6–lb. sledgehammer.
11. Table for simulation chopping.
12. Inflated car tire.
13. 100 feet of 1 3/4" charged hose capped on both ends.
14. Dummy weighing 165 lbs.
16. Two (2) cones.
17. 2 Stopwatches with split time capabilities.
18. Colored tape.
19. Gloves of various sizes.
20. Two (2) timers with stopwatches.
21. One (1) person to get next candidate ready.
22. One (1) to reset the course and replace items to starting position.

INSTRUCTIONS TO ADMINISTRATOR

1. Ensure that the course is set up as shown in Evolution diagram (Figure 7). Specific measurements and placement of all pieces of equipment are presented in Figure 8 (page 15). When setting up the evolution use Figure 8 to ensure the course is set up properly.
2. Ensure that all runways are properly marked and that all equipment (ladder, highrise bag, stairs, equipment, sledgehammer, hose, dummy) are in the correct locations.
3. Ensure that the 24–foot ladder is securely connected to the frame and that it moves easily when the fly is raised.

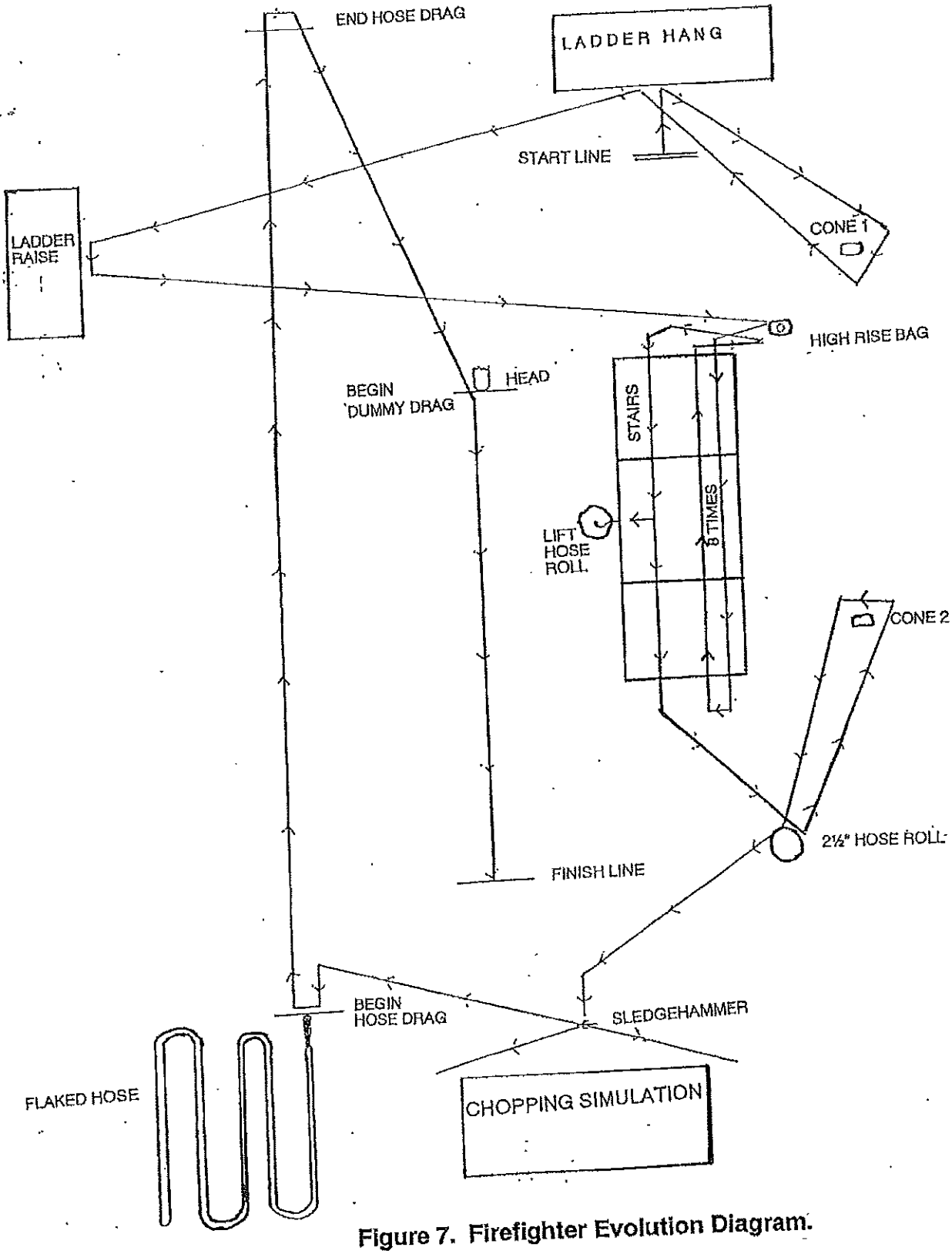

Figure 7. Firefighter Evolution Diagram.

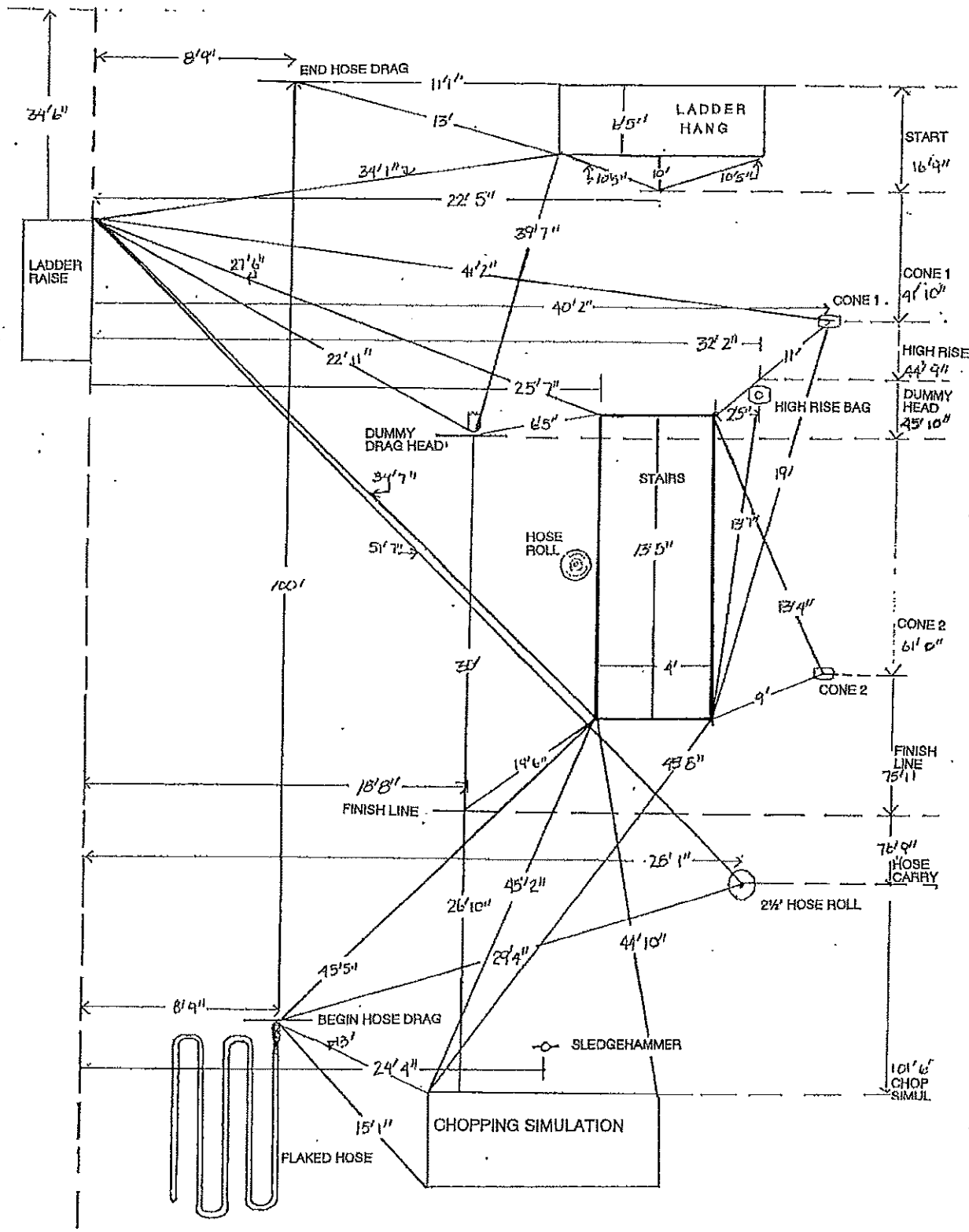

Figure 8. Firefighter Evolution Set-Up Diagram.

4. Prior to getting the candidates ready for the evolution inform them that gloves are available for use during the test. Allow them to determine whether they want to use the gloves.

5. Describe the job simulation by reading the instructions aloud to the examinees. "Walk" the examinees through the course while describing the evolution.

   Do not shortcut the course. Walk in the exact path the candidate will take. Show the candidate how to pick up an replace each piece of equipment.

   Demonstrate the two hand over hand methods to raise the fly.

   a. Raise and lower the ladder with the thumbs pointing toward the ceiling.

   b. Raise and lower the ladder with the heel of the hand pointing toward the ceiling.

6. The candidate will wear a 40–lb. weighted vest during the evolution. Be sure that the vest is properly fitted to the candidate before starting. The vest should be snug and up on the hips. It should not hang loosely on the candidate. When the examinee is ready, begin the test with the command, "Ready, Go" and start the stopwatch.

7. Running is not allowed during the evolution, however the candidate should move through the evolution as quickly as possible without running. Instruct the candidate to walk briskly/as fast as possible. In addition, the events must be completed properly. If a candidate runs, stop the evolution and tell him/her of the error. Allow the candidate to rest for a minimum of 15 minutes and test the candidate a second time.

   If the candidate fails to follow the instruction during the second trial, he/she will be disqualified.

8. If the examinee fails to perform a task properly, have the examinee repeat that task. The time keeps running during the correction. For example, if the steps are skipped during the stair climb, the section of steps must be repeated.

9. The chief timer must stay with the candidate throughout the test and use short commands to direct the candidate to the next event.

10. Stay with the examinee throughout the test and use short commands to direct the examinee to each event.

11. Timing the test.

    a. There will be 2 timers who will start their watches on the command "GO" and stop the watches when the examinee drags the mannequin completely across the finish line.

12. Record the times as follows:

    a. Record the final times from both watches in the spaces on the score sheet labeled Timer 1 and Timer 2.

    b. The final score for the evolution is the faster of the times from the two watches. If the spread between the two watches is greater than two (2) seconds, the final score has to be computed by taking the average of the time from the two watches.

    c. Record the complete time listed on the watch. Record to the 1/100th of a second (e.g., 2:34.34).

13. Calculation of the mean (average) of two times.

For example, if the times on the administrators' watches for the Firefighter Evolution were 4:13.21 and 4:15.25. These scores had a difference greater than 2 seconds, so the average of the scores was calculated. First the scores were converted to seconds, by multiplying the minutes by 60 *(4 x 60 = 240)*. Then this amount was added to the seconds and 100ths *(4:13.21: 240 + 13.21 = 253.21; 4:15.25: 240 + 15.25 = 255.25)*. The recalculated values were summed *(253.21 + 255.25 = 508.46)* and then the averaged *(508.46 ÷ 2 = 254.23)*.

The score must then be re-converted to be entered on the score sheet. In order to convert the average (254.23) into minutes and seconds, divide the number by 60 *(254.23 ÷ 60 = 4.2372)* this will give you the whole minutes. Then multiply the amount after the decimal (.2372) by 60 *(.2372 x 60 = 14.23)*. Add this amount to the minutes *(14.23 secs + 4 mins)* for the converted total time *(4:14.23)*. The score of 4:14.23 would be entered under the Final Score heading.

If the individual's mean score (e.g., 4:19) exceeds the passing score of 4:14.77 and results in the individual failing the evolution, the individual should be offered a second trial. The second trial should be given at a minimum of 15 minutes after completion of the first trial.

14. What to do if a watch malfunctions.

a. If one watch malfunctions or is not cleared, the other watch is used.

b. The time from the malfunctioning watch is ***NOT*** recorded.

c. If both watches malfunction, allow the examinee to rest for 15 minutes, and administer the evolution again.

15. Reposition all components of the evolution as outlined in the Firefighter Evolution diagram (Figure 7) for the next examinee.

INSTRUCTIONS TO EXAMINEE

The purpose of this evolution is to determine how fast you can complete a series of simulated tasks.

1. Before starting the evolution you will put on a weighted vest weighing 40 pounds. The weight of the vest is the same as the weight of turnout gear and self-contained breathing apparatus.

2. Stand at the start line.

3. On the command "GO", walk to the 16-foot ladder. Lift the ladder from the rack and carry it around the cone and back to the ladder rack. Place the ladder on the correct rung.

   When lifting the ladder use proper lifting technique (bend at the knees and keep your back straight and head up when lifting the ladder). The center point of the ladder is marked.

4. Once you replace the ladder in the rack, walk to the 24-foot extension ladder. Grab the halyard (rope) and pull downward on the rope to raise the fly. Keep pulling on the rope until the taped rungs on the ladder and fly match up and the fly is locked on the rung. I will tell you when the ladder is extended and locked. Once the fly is locked, unlock the fly and lower the extension to the starting position. You must lower the fly in a controlled manner and not let the fly drop or the rope slip through your hands. If you let the fly drop, you will have to raise and lower it a second time, while the time continues to run.

5. Next, walk to the high rise bag and lift it. When lifting the high rise pack, use proper lifting technique. Then walk over to the stairs and begin ascending the stairs. You will walk up and down the stairs, carrying the high rise bag, for eight (8) cycles. Going up and down the stairs is one cycle. I will count off the cycles to you. Do not skip any steps when climbing up or down the steps.

6. Once you have completed eight cycles of the stair climb, put the high rise bag back in its original spot and climb to the top of the stairs.

7. At the top of the stairs, pull on the rope to hoist the hose roll up and over the railing. Once the hose roll is over the railing, place the hose roll on the top of the stairs and go back down the stairs to where you place the high rise pack.

8. Go around the stairs to the hose roll on the ground, lift it using proper lifting technique, and carry it around the cone and back to its original spot. Then set it down in the marked area.

9. Walk to the forced entry apparatus and pick up the sledgehammer. For this event, you will hit the tire on the apparatus with the sledgehammer. Keep hitting the tire with the sledgehammer until you have moved the tire to the other side of the apparatus. I will say, "OK" when the tire has reached the other side. Return the sledgehammer to the marked spot in front of the table.

   For the forced entry apparatus you may begin from either side. If you are right handed, you will probably want to begin on the right side of the apparatus. If you are left handed, you will probably start on the left side. The tire will be set on the side you wish to start before you begin the evolution.

10. **Go to the charged hose, lift one end of the hose, and place it across your chest to the opposite hip. You will drag the hose until both feet are past the end line. I will say, "OK" when you have passed this line.**

11. **When you have passed the line, set the end of the hose down and go to the mannequin.**

12. **Grab the handles at the head end of the mannequin and drag it until the feet completely cross the finish line.**

13. **Your score will be the time to complete the course. The time will run continuously from when you begin until you complete the mannequin drag. The time runs while moving from one event to another. Furthermore, you must perform certain events properly (do not drop equipment, do not allow the halyard to slip through your hands, lower the ladder extension under control, do not skip steps).**

    Remember if you run, you will be stopped and have to start over at the beginning of the evolution. If you do not perform events properly, I will tell you to repeat the event while the time continues to run.

15. **Do you have any questions?**

16. **"Ready, GO."**

SCORING

1. Time to completion of evolution (feet of mannequin completely crosses the finish line).

BRIEF INSTRUCTIONS DURING THE EVOLUTION

1. Lift the ladder of the rack, carry it around the cone and return it to the rack.
2. Go to the 24' ladder and raise the fly until it locks out at the top. I will say "OK" when it is locked out. Lower the fly in a controlled manner.
3. Go to the highrise pack, pick it up, and carry it up and down the stairs 8 times.
4. Place the highrise pack back in the box.
5. Go to the top of the stairs and hoist the hose roll up and over the railing.
6. Go back down the stairs toward the highrise pack and move to the 2½ inch hose roll.
7. Pick up the hose roll and carry it around the cone and back to the start area.
8. Go to the forced entry apparatus, pick up the sledgehammer, and strike the tire with the sledgehammer until it hits the other end. I will say "OK" when you have reached the other end.
9. Go to the 1 3/4" hose, lift the hose over you shoulder and across your body to the opposite hip.
10. Drag the hose past the red line and place the nozzle on the ground.
11. Go to the mannequin, grab the handles at the head–end and drag it until the mannequin's feet cross the finish line.

MAZE CRAWL

PURPOSE

The purpose of this event is to determine the examinee's ability to crawl through a darkened, confined area.

EQUIPMENT AND PERSONNEL REQUIREMENTS

1. Maze. The maze will be set up for a Level 1 crawl in the U.S. Naval Mobil Training Laboratory.
2. Stopwatch.
3. Mask with a darkened facepiece.

INSTRUCTIONS TO ADMINISTRATOR

1. Ensure that the maze is set up properly and there are no unintended obstacles in the maze.
2. Describe the event by reading the instructions to the examinee aloud. Show the examinee a diagram of the maze before beginning the crawl.
3. Put the mask on the examinee and give him/her one (1) minute to become acclimated to the mask.
4. After the one (1) minute, open the door and have the candidate get into a crawling position. Close the door and give the command, "Ready, GO."
5. Start the watch when you say "GO." Stop the watch examinee exits the maze. This is signified by the examinee's hands crossing the yellow line that is directly below the exit of the maze.
6. Record the time as listed on the stopwatch. Record all times to the nearest hundredth of a second (e.g., 0:32.66).

INSTRUCTIONS TO EXAMINEE

The purpose of this test is to determine your ability to crawl through a confined area.

1. The maze crawl involves crawling 35 feet through a darkened and confined maze.

   When performing this event, keep your right hand on the wall so you will know where the maze turns.

2. You will be given one (1) trial to complete this exercise.

3. You will wear a darkened facepiece when completing the crawl.

4. You will place the mask on your face. I will adjust it to ensure it is fitted properly.

5. Once the mask is in place, you will stand outside for one (1) minute. After the one (1) has passed, you will enter the maze and get into a crawling position.

6. I will close the door and give the command "Ready, GO."

7. Your score will be the time it takes you to reach the end of the maze. The time will begin when I close the maze door and say "Go". The time runs continuously. You can stop at any time during the exercise. However, the timer does not stop when you stop. The time will stop when your hands cross the yellow line at the end of the maze.

8. Before beginning the maze crawl, I will show you a diagram of the maze so you will know the layout of the maze. *[Administrate shows diagram.]*

9. Do you have any questions?

10. I will put the facepiece on you and give you 1 minute to become acclimated to the facepiece.

11. Step into the entrance to the maze and I will shut the door.

12. "Ready, GO."

SCORING

1. Time to complete the maze crawl. Stop the watch when hands cross the yellow finish line.

INSTRUCTIONS TO EXAMINEE

The purpose of this test is to determine your ability to ascend and descend the aerial ladder to height of 40–feet.

1. **The aerial ladder climb involves climbing 40 feet up an extended aerial ladder. You will climb until you reach the 40–foot mark with both feet placed on the 40–foot rung. Once both feet are on the 40–foot rung, you may begin descending the ladder until you reach the starting point.**

2. **You will wear a safety harness for this event which will be controlled from the ground. You may feel a little "tugging" during the descent. This is for your protection. Just continue to descend and the rope will follow you down the ladder.**

3. **You will begin with both feet on the baseplate of the truck and both hands on the ladder. You may place your hands on the side of the ladder or on the rungs.**

4. **You will be given one (1) trial to complete this exercise.**

5. **Your score will be the time it takes you to reach the 40–foot mark with both feet and descend the ladder to the starting point. The time will begin with you at the bottom of the ladder with both feet on the baseplate of the truck and hands on the ladder. The time stops when you reach the base of the ladder (both feet on the baseplate of the truck, hands on the ladder).**

6. **The time runs continuously. You may stop at any time during the exercise. However, the time does not stop when you stop. It continues to run.**

7. **Do you have any questions?**

8. **Put on a harness and tighten it until it is secure.**

9. **Stand in front of the ladder with both hands on the ladder.**

10. **"Ready, GO."**

SCORING

1. Time to ascend and descend the ladder.

VO2 TEST

Purpose. The purpose of this test is to evaluate the individual's aerobic capacity and ability to perform tasks with a duration of five (5) minutes or more.

Materials. Bicycle ergometer, blood pressure cuff or heart rate monitor, stop watches, metronome.

Instructions to Administrator.

1. Follow instructions for test as listed in the Y's Way to Physical Fitness.
2. During the test a steady heart rate must be attained for each three (3) minute stage. Heart rate will be taken each minute of the test. Steady rate will be assumed if the subjects heart rate does not deviate by more than 5 BPM between the 2nd and 3rd minute of recording for each stage. If the recording deviates by more than 5 BPM, another minute of exercise will be completed and the 3rd and 4th minute recordings compared. The extension of the stage will continue until a steady rate is attained.
3. The test should be terminated if:
   a. An abnormal blood pressure response is recorded.
   b. An abnormal heart rate response is recorded.
   c. The subject is unable to maintain cadence.
   d. The subject requests termination.
   e. 85% of estimated maximal heart rate is achieved.
3. The protocol is as follows:
   a. Warm up at 300 kgm/min (50 watts) for 3 minutes.
   b. Pedal at a rate of 50 RPMs.
   c. Increase the work rate (kgm/min) for each stage by an amount that is listed in the table.
   d. Each stage is 3 minutes in duration.
   e. Terminate the test when the examinee reaches 85% of estimated maximal heart rate.

Scoring the Bicycle Ergometer Test

1. Follow the score sheet and record the heart rates at each minute.
2. Record the blood pressure as shown on the score sheet.
3. Calculate the VO^2 max at the end of the test based on the 4 data points or through use of a computer program.
4. At the completion of the calculations record the VO^2 on the score sheet.

Instructions to Examinee for VO_2.

1. The purpose of this test is to evaluate your aerobic capacity and ability to perform tasks lasting more than five minutes in duration.

2. Before getting on the bicycle, let me describe the test procedure to you.

3. The bicycle ergometer test, is a submaximal protocol which allows for assessment of you aerobic capacity. This test will be terminated when your heart rate reaches approximately 85% of you age estimated maximal heart rate.

4. A metronome will be set at 60 beats per minute to allow you to maintain a pedalling cadence of 60 revolutions per minute.

5. Please sit on the bicycle and let me adjust the seat to the proper height. *(Administrator: Ensure that the seat height allows the subject to have the knee in a slightly flexed position when the heal is on the pedal and the leg is in the extended position.)*

6. Practice pedalling the bicycle in time to the metronome.

7. As you complete the test your heart rate will increase in relation to the increasing work load on the bicycle. Your heart rate will be monitored each minute during the test. The work load will be increased every three (3) minutes until your heart rates reaches 85% of your age predicted maximal heart rate.

8. For safety reasons I will take you blood pressure every three (3) during the test. *(Administrator: Place the blood pressure on the subject's right arm and ensure the cuff is the correct size. Take the cuff to the subject's shoulder.)*

9. During the test I will be asking you how hard you feel you are exerting yourself. When asked, please point to the number that best describes your overall exertion level from the Perceived Exertion Scale. Remember that you are providing an *overall* feeling of exertion and should not pinpoint one area of you body. *(Administrator: Show the subject the Board Scale and explain it.)*

10. Do you have any questions?

HUMAN PERFORMANCE SYSTEMS, INC.

January 31, 2012

Captain Jeffrey Logan
Norfolk Fire Department
100 Brooke Ave., Suite 400
Norfolk, VA 23510

Dear Jeff:

The enclosed document contains the instructions for the firefighter test developed and validated by Human Performance Systems, Inc. If you are going to use this for incumbent testing there are a variety of parameters that must be taken into consideration. We have recently conducted several studies to provide fire and police departments with incumbent assessment programs. There are a variety of factors (e.g., policies, injury, passing scores, time lines, employment issues) that must be taken into account for incumbent programs to be successful. If you need assistance with these processes, please contact me or have your Assistant Chief contact me.

Sincerely,

Debby.

Deborah L. Gebhardt, Ph.D. FACSM
President

5000 Sunnyside Avenue ♦ Beltsville, Maryland 20705 ♦ Phone (301) 595-9509 ♦ Fax (301) 595-0005